Koch, Kristine

From: Koch, Kristine
Sent: Monday, February 10, 2014 11:35 AM
To: James McKenna; Gene Revelas
Cc: Jennifer Woronets; Humphrey, Chip
Subject: Portland Harbor RI Section 5 - Surface Water

Jim and Gene – Can you confirm that the following is true for surface water samples collected during Rounds 2A and 3A.

Peristaltic and XAD (column and filter) samples were collected during all sampling events, but not at all sampling locations. Table 5.4-1 summarizes the sampling methods at each sampling station for each sampling event. A total of six transect locations located at RM 2, mouth of Multnomah Channel, RM 3.9, RM 6.3, RM 11 and RM 16 were sampled, although not all transects were sampled during all sampling events. Transects were sampled in three ways: as a vertically-integrated, equal discharge increment transect [EDI-VI]; as a near surface equal discharge increment transect and near bottom equal discharge increment transect pair [EDI-NS/NB]; and as a vertically-integrated, three segment (East, Mid-channel, West) equal discharge increment transect [EDI-VI (E,M,W)]. Three single-point vertically-integrated samples were collected during Round 2A low flow conditions only (W010, W014, and W020). The remaining Round 2A single point samples were collected as near bottom samples. Round 3A single point samples were collected as near surface and near bottom pairs. Both grab and peristaltic samples (single-point samples) were collected by Siltronic and NW Natural. Not all samples were analyzed for every analyte. Each subsection that follows will discuss which samples were analyzed for that contaminant.

A total of 23 peristaltic sample locations and seven XAD stations were sampled during the Round 2A low flow conditions and six peristaltic and XAD stations were sampled during the Round 3A low flow conditions (Table 5.4-2). Twenty single-point peristaltic stations (W001-W004, W006-W010, and W012-W022) and four single-point XAD stations were sampled (W013, W015, W016, W018) during each of the three Round 2A sampling events (Table 5.4-1). Both peristaltic and XAD samples were collected for all the low flow transect samples. Three Round 2A transect location (W005, W011, and W023) were collected during low flow conditions as EDI-VI. Four Round 3A transect locations (W005, W011, W024, and W027) were collected as EDI-NS/NB and the other two Round 3A transect locations (W023 and W025) were collected as EDI-VI(E,M,W). Replicates were only collected at the following single point stations: W013 (peristaltic and XAD) and W016 (peristaltic only) during November 2004; W013 (peristaltic and XAD) and W002, W004, and W016 (peristaltic only) during March 2005; and W002 and W016 (peristaltic only) and W013 (XAD only) during July 2005. A total of 91 peristaltic samples and 38 XAD samples were collected to represent the low flow conditions of the river (Table 5.4-3). As summarized in Table 5.4-4, samples collected during this flow regime include:

- 59 peristaltic and 15 XAD single-point, near-bottom samples;
- 9 peristaltic single-point, vertically-integrated samples;
- 15 peristaltic and 15 XAD transect, EDI-VI samples;
- 4 peristaltic and 4 XAD transect, EDI-NS samples; and
- 4 peristaltic and 4 XAD transect, EDI-NB samples.

Storm water-influenced flow conditions were only sampled once during Round 3A (November 2006). Both peristaltic and XAD samples were collected at all six transect locations (W005, W011, W023, W024, W015, and W027) and 12 single-point stations (W026 and W028-W038) during this sampling event (Table 5.4-1). Four of the transect locations (W005, W011, W024 and W027) were sampled as EDI-NS/NB. The other two transect locations (W023 and W025) were sampled as EDI-VI(E,M,W). All the single-point samples were collected as NS/NB pairs. A total of 42 peristaltic samples and 42 XAD samples were collected to represent the storm water-influenced flow conditions of the river (Table 5.4-3). As summarized in Table 5.4-4, samples collected during this flow regime include:

- 14 peristaltic and 14 XAD single-point, near surface samples;
- 14 peristaltic and 14 XAD single-point, near-bottom samples;
- 6 peristaltic and 6 XAD transect, EDI-VI samples;
- 4 peristaltic and 4 XAD transect, EDI-NS samples; and

• 4 peristaltic and 4 XAD transect, EDI-NB samples.

High flow conditions were sampled twice during Round 3A (January 2006 and January-March 2007). In January 2006, peristaltic and XAD samples were collected at three transects (W005, W023, and W024). Two samples, W005 and W023, were collected as EDI-VI samples. The third sample, W024, was collected as EDI-NS/NB samples. One replicate was collected at W024 for the NS sample only. Both peristaltic and XAD samples were collected at all six transects and 12 single-point stations (W026 and W028-W038) during the January-March 2007 sampling event. Four of the transect locations (W005, W011, W024 and W027) were sampled as EDI-NS/NB. The other two transect locations (W023 and W025) were sampled as EDI-VI(E,M,W). All the single-point samples were collected as NS/NB pairs. A total of 44 peristaltic samples and 43 XAD samples were collected to represent the high flow conditions of the river (Table 5.4-3). As summarized in Table 5.4-4, samples collected during this flow regime include:
• 12 peristaltic and 12 XAD single-point, near surface samples;
• 12 peristaltic and 12 XAD single-point, near-bottom samples;
• 11 peristaltic and 10 XAD transect, EDI-VI samples;
• 5 peristaltic and 5 XAD transect, EDI-NS samples; and
• 4 peristaltic and 4 XAD transect, EDI-NB samples.

Table 5.4-1 Surface Water Sampling Event and Station Summary

			Round 2A				
			Nov 2004 Low Flow		Mar 2005 Low Flow		Ju Lo
Transect Stations	River Mile	Sampling Method	Peristaltic	XAD	Peristaltic	XAD	Peristalt
W005	3.9	EDI-VI	X	X	X	X	X
		EDI-NS/NB					
W011	6.3	EDI-VI	X	X	X	X	X
		EDI-NS/NB					
W023	11	EDI-VI	X	X	X	X	X
		EDI-VI(E,M,W)					
W024	16	EDI-NS/NB					
W025	2	EDI-VI(E,M,W)					
W027	MC	EDI-NS/NB					
Single-Point Stations							
W001	2.0E	NB	X		X		X
W002	2.2W	NB	X		XR		XR
W003	3.0W	NB	X		X		X
W004	3.7E (International Slip)	NB	X		XR		X
W006	4.0W	NB	X		X		X
W007	4.4E (T4/Slip 1)	NB	X		X		X
W008	4.6E (T4/slip 3)	NB	X		X		X
W009	5.6W	NB	X		X		X
W010	5.7E	VI	X		X		X
W012	6.3W	NB	X		X		X
W013	6.9E	NB	XR	XR	XR	XR	X
W014	6.9E	VI	X		X		X
W015	6.9W	NB	X	X	X	X	X
W016	7.2W	NB	XR	X	XR	X	XR

W017	7.5W	NB	X		X		X
W018	8.3 (Swan Island Lagoon)	NB	X	X	X	X	X
W019	8.6W	NB	X		X		X
W020	9.1 (Swan Island Lagoon)	VI	X		X		X
W021	8.7 (Swan Island Lagoon)	NB	X		X		X
W022	9.7W	NB	X		X		X
W026	2.1E	NS/NB					
W028	3.6E	NS/NB					
W029	4.4W	NS/NB					
W030	5.5E	NS/NB					
W031	6.1W	NS/NB					
W032	6.9E	NS/NB					
W033	7.0W	NS/NB					
W034	7.5W	NS/NB					
W035	8.5 (Swan Island Lagoon)	NS/NB					
W036	8.6W	NS/NB					
W037	9.6W	NS/NB					
W038	9.9E	NS/NB					

Notes: 1 - Only NS sample collected.

E - East
EDI - Equal discharge increment
M - Mid-channel
MC - Mulnomah Channel
NB - Near bottom
NS - Near surface
VI - Veritically integrated
W - West
X - indicates sample was colleted
XR - indicates that a sample and replicated was collected
XAD -

Table 5.4-2 Number of Surface Water Stations by Sampling event for each Sample Collection Method

	Low Flow				Storm Water Influenced Flow	High Flow	
	Nov-04	Mar-05	Jul-05	Sep-06	Nov-06	Jan-06	Jan-07
Peristaltic	23	23	23	6	18	3	18
Peristaltic Replicates	2	4	2	0	2	1	0
XAD	7	7	7	6	18	3	18
XAD Replicates	1	1	1	0	2	0	0
Total # Samples	33	35	33	12	40	7	36

Table 5.4-3 Number of Surface Water Samples by Sampling event for each Sample Collection Method

	Low Flow	Storm Water Influenced Flow	High Flow

	Nov-04	Mar-05	Jul-05	Sep-06	Nov-06	Jan-06	Jan-07
Peristaltic	23	23	23	14	38	3	40
Peristaltic Replicates	2	4	2	0	4	1	0
XAD	7	7	7	14	38	3	40
XAD Replicates	1	1	1	0	4	0	0
Total # Samples	33	35	33	28	84	7	80

Table 5.4-4 Number of Surface Water Samples by Sampling Event and Sample Collection Method for each Sample Type

	Peristaltic						
	Low Flow				Storm Water Influenced Flow	High Flow	
	Nov-04	Mar-05	Jul-05	Sep-06	Nov-06	Jan-06	Jan-07
SP-NS					14		12
SP-NB	19	21	19		14		12
SP-VI	3	3	3				
T-EDI/VI	3	3	3	6	6	3	8
T-EDI/NS				4	4	1	4
T-EDI/NB				4	4		4
Total # Samples	25	27	25	14	42	4	40

SP-NS	Single-point, near-surface
SP-NB	Single-point, near bottom
SP-VI	Single-point, vertically-integrated
T-EDI/VI	Transect, equal-discharge-increment, vertically-integrated
T-EDI/NS	Transect, equal-discharge-increment, near-surface
T-EDI/NB	Transect, equal-discharge-increment, near-bottom

Note that the table numbered 5.4-1 is similar to Table 5.3-8 in the Draft RI, but I changed it a bit to make it more correct.

I'm going to proceed with the edits to this section based on the presumption that this is correct, but will modify if you find any errors, so please confirm ASAP.

Thanks,

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